What is claimed is:

1. A complex oxide having a BET specific surface area of about 10 to about 200 m^2/g, comprising zinc oxide as a primary component, containing crystalline structures of both zinc oxide and silica, and exhibiting diffraction peaks in lattice planes (100), (002), and (101), which are X-ray crystallographically specific to diffraction peaks of crystalline zinc oxide, and in a lattice plane (101) which is X-ray crystallographically specific to the diffraction peak of crystalline silica.

2. A complex oxide according to Claim 1, wherein the crystalline structures of zinc oxide and silica are contained in primary particles of the complex oxide.

3. A complex oxide according to Claim 1 or 2, wherein tetrapod-shaped particles and/or acicular particles account for about 5 to about 95% by count of the primary particles.

4. A complex oxide according to Claims 1, wherein, after the complex oxide is allowed to stand at about 800°C for about one hour, the complex oxide has a BET specific surface area at least 70% that of the complex oxide before being allowed to stand under the above conditions.

5. A process for producing a complex oxide as recited in Claim 1, which comprises, in a vapor-phase reaction in which zinc assuming a gaseous form is oxidized in the presence of oxygen and steam, feeding into a reactor a Zn raw material gas containing an inert gas and zinc assuming a gaseous form, and an oxidative gas containing oxygen and steam, to thereby allow the zinc to be oxidized in the reactor; and feeding a silicon-containing composition into a reaction zone of the reactor, to thereby allow oxidation to proceed.

6. A process for producing a complex oxide according to Claim 5, wherein the silicon-containing composition is fed into a zone up to 1 m downstream of a point at which oxidation of the zinc is initiated.

7. A proc ss for producing a complex oxide according to Claim 5 or 6, wherein the silicon-containing composition contains an organosilane or a silicon halide.

8. A process for producing a complex oxide according to Claim 5, wherein the Zn raw material gas contains zinc in an amount of at least about 1 mol% and about 70 mol% or less.

9. A process for producing a complex oxide according to Claim 5, wherein the Zn raw material gas is fed into the reactor at about 900 to about 1,800°C.

10. A process for producing a complex oxide according to Claim 5, wherein the Zn raw material gas is fed into the reactor at a rate of about 10 to about 250 m/second.

11. A process for producing a complex oxide according to Claim 5, wherein the oxidative gas is fed into the reactor at about 900 to about 1,800°C.

12. A process for producing a complex oxide according to Claim 5, wherein the oxidative gas is fed into the reactor at a rate of about 10 to about 250 m/second.

13. A process for producing a complex oxide according to Claim 5, wherein the silicon-containing composition is fed into the reactor at about 50 to about 1,200°C.

14. A process for producing a complex oxide according to Claim 5, wherein the silicon-containing composition is fed into the reactor at a rate about 30% to about 300% the rate at which the Zn raw material gas is fed into the reactor.

15. A process for producing a complex oxide according to Claim 5, wherein the amount of oxygen contained in the oxidative gas is about 5 vol% to about 100 vol%, and the total amount of oxygen and steam contained in

the oxidative gas is about 5 vol% to about 100 vol%.

16. A process for producing a complex oxide according to Claim 5, wherein the oxidativ gas is fed into the r actor through a plurality of nozzles.

17. A process for producing a complex oxide according to Claim 5, wherein the silicon-containing composition is fed into the reactor through a plurality of nozzles.

18. A process for producing a complex oxide according to Claim 5, wherein the Zn raw material gas is fed into the reactor through a plurality of nozzles.

19. A complex oxide produced through a production process as recited in any one of Claims 5,6 and 8 to 18.

20. An organic polymer composition comprising a complex oxide as recited in Claim 1 in an amount of about 0.01 to about 80 mass% on the basis of the entirety of the composition.

21. An organic polymer composition according to Claim 20, wherein the organic polymer of the composition is at least one species selected from the group consisting of a synthetic thermoplastic resin, a synthetic thermosetting resin, and a natural resin.

22. An organic polymer composition according to Claim 20 or 21, which assumes the form of a compound.

23. An organic polymer composition according to Claim 20 or 21, which assumes the form of a masterbatch.

24. A molded product formed through molding of an organic polymer composition as recited in Claim 20.

25. A powder comprising a complex oxide as recited in Claim 1.

26. A slurry comprising a complex oxide as recited in Claim 1.

27. A coating agent comprising a complex oxide as recited in Claim 1.

28. A coating material comprising a complex oxid as recited in Claim 1.

29. A structure comprising, on its surface, a complex oxide as recited in Claim 1.

30. A cosmetic composition comprising a complex oxide as recited in Claim 1.

31. A complex oxide produced through a production process as recited in claim 7.